Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1-17. (canceled)

18. (currently amended) A method for obtaining genetically modified human pluripotent hematopoietic stem cells, comprising:

a) contacting a vector comprising a polynucleotide sequence encoding a heterologous gene with a population of human ~~CD34+~~ pluripotent hematopoietic stem cells cultured with fibronectin and in the presence of an effective amount of a mpl ligand and a flt3 ligand, each ligand provided in a concentration range of about 0.1 ng/mL to about 500 ng/mL, wherein said vector is selected from the group consisting of retroviral vectors, adenoviral vectors, and adeno-associated viral vectors and wherein said ~~population of CD34+~~ human pluripotent hematopoietic stem cells ~~includes a subpopulation of pluripotent~~ are $CD34^{+}Thy\text{-}1^{+}Lin^{-}$ cells and can differentiate into any hematopoietic cell type; and

b) obtaining said modified human pluripotent hematopoietic stem cells.

19. (currently amended) The method according to claim 18, further comprising culturing the population of human pluripotent hematopoietic stem cells in the

presence of a c-kit ligand in a concentration range of about 5 ng/mL to about 200 ng/mL prior to contacting said cells with said vector.

20. (currently amended) The method according to claim 19, further comprising culturing the population of human pluripotent hematopoietic stem cells in the presence of interleukin 3 (IL-3) in a concentration range of about 5 ng/mL to about 200 ng/mL prior to contacting said cells with said vector, wherein said concentration range does not cause differentiation of the human pluripotent hematopoietic stem cells.

21-22. (canceled)

23. (currently amended) A method for obtaining genetically modified human pluripotent hematopoietic stem cells, comprising:

a) contacting a vector comprising a polynucleotide sequence encoding a heterologous gene with a population of human ~~CD34+~~ pluripotent hematopoietic stem cells cultured with fibronectin and in the presence of an effective amount of [[a]] thrombopoietin ~~ligand~~ (TPO), a flt3 ligand (FL), and interleukin 6 (IL-6), wherein the TPO, FL and IL6 are each provided in a concentration range of about 0.1 ng/mL to about 500 ng/mL, and wherein said vector is selected from the group consisting of retroviral vectors, adenoviral vectors, and adeno-associated viral vectors and wherein said ~~population of CD34+~~ human pluripotent

hematopoietic stem cells are ~~include a subpopulation of pluripotent~~ $CD34^{+}Thy\text{-}1^{+}Lin^{-}$ cells and can differentiate into any hematopoietic cell type; and

b) obtaining said modified human pluripotent hematopoietic stem cells.

24. (currently amended) The method of claim 23, further comprising culturing the human pluripotent hematopoietic stem cells in the presence of ~~an effective amount of~~ leukemia inhibitory factor (LIF) ~~wherein said effective amount is in the~~ in a concentration range of about 5 ng/mL to about 200 ng/mL prior to contacting said cells with said vector.

25. (currently amended) The method of claim 23, further comprising culturing the human pluripotent hematopoietic stem cells in the presence of ~~an effective amount of~~ interleukin 3 (IL-3) ~~wherein the effective amount is in the~~ in a concentration range of about 10 ng/mL to about 100 ng/mL prior to contacting said cells with said vector.

26. (currently amended) The method of claim 23, further comprising culturing the human pluripotent hematopoietic stem cells in the presence of a c-kit ligand in a concentration range of about 5 ng/mL to about 200 ng/mL prior to contacting said cells with said vector.

27. (currently amended) The method of claim 25, further comprising culturing the human pluripotent hematopoietic stem cells in the presence of a c-kit ligand in a

concentration range of about 5 ng/mL to about 200 ng/mL prior to contacting said cells with said vector.

28-30. (canceled)

31. (previously presented) The method according to claim 23, wherein the effective amount of TPO and FL individually is in the range of about 5 ng/mL to about 200 ng/mL and the effective amount of IL-6 is in the range of about 10 ng/mL to about 100 ng/mL.

32. (previously presented) The method according to claim 23, wherein the vector is a retroviral vector.

33. (previously presented) The method according to claim 23, wherein the heterologous gene is a marker gene.

34. (currently amended) The method according to claim 23, further comprising expanding the modified human pluripotent hematopoietic stem cells.

35-36. (canceled)

37. (currently amended) A method of transducing human ~~CD34+ hematopoietic cells including a subpopulation of~~ pluripotent $CD34^{+}Thy\text{-}1^{+}Lin^{-}$ hematopoietic stem cells, comprising:

a) obtaining a source of <u>said</u> ~~hematopoietic cells including the subpopulation of pluripotent CD34+Thy-1+Lin- hematopoietic~~ stem cells, <u>wherein said stem cells can differentiate into any hematopoietic cell type</u>;

b) culturing said cells with fibronectin and the cytokines thrombopoietin (TPO), flt3 ligand (FL), and interleukin 6 (IL-6), individually provided in the range of about 0.1 ng/mL to about 500 ng/mL;

c) infecting the cultured cells with a retroviral vector including a polynucleotide sequence encoding a heterologous gene; and

d) obtaining transduced cells wherein said gene is expressed.

38. (previously presented) The method according to claim 37, wherein the TPO, FL and IL-6 are individually provided in the range of about 5 ng/mL to about 200 ng/mL.

39. (currently amended) The method according to claim 37, further comprising culturing the cells in the presence of ~~an effective amount of~~ leukemia inhibitory factor (LIF) ~~wherein said effective amount is in the~~ <u>in a concentration</u> range of about 5 ng/mL to about 200 ng/mL.

40. (currently amended) The method according to claim 37, further comprising culturing the cells in the presence of ~~an effective amount of~~ IL-3 ~~wherein said effective amount is in the~~ in a concentration range of about 10 ng/mL to about 100 ng/mL, wherein said concentration range does not cause differentiation of the human pluripotent hematopoietic stem cells.

41. (currently amended) The method according to claim 39, further comprising culturing the cells in the presence of ~~an effective amount of~~ IL-3 ~~wherein said effective amount is in the~~ in a concentration range of about 10 ng/mL to about 100 ng/mL.

42. (currently amended) The method according to claim 37, wherein said ~~effective amount of~~ IL-6 is in the range of about 10 ng/mL to about 100 ng/mL.

43. (previously presented) The method according to claim 37, wherein the TPO is provided as a mimetic.

44-45. (canceled)

46. (previously presented) The method according to claim 37, wherein the heterologous gene is a marker gene.

47. (previously presented) The method according to claim 37, wherein the heterologous gene is a therapeutic gene.

48. (previously presented) The method according to claim 18 wherein the fibronectin is RetroNectin™.

49. (previously presented) The method according to claim 23 wherein the fibronectin is RetroNectin™.

50. (previously presented) The method according to claim 37 wherein the fibronectin is RetroNectin™.

51. (canceled)

52. (currently amended) A method for obtaining genetically modified human pluripotent hematopoietic stem cells, comprising:

a) contacting a vector comprising a polynucleotide sequence encoding a heterologous gene with a population of human pluripotent ~~CD34+~~ hematopoietic stem cells cultured with fibronectin and in the presence of an effective amount of a mpl ligand and a flt3 ligand, each ligand provided in a concentration range of about 0.1 ng/mL to about 500 ng/mL, and optionally in the presence of one or more cytokines selected from: c-kit ligand in a

concentration range of about 5 ng/mL to about 200 ng/mL, interleukin 3 (IL-3) in a concentration range of about 5 ng/mL to about 200 ng/mL, leukemia inhibitory factor (LIF) in a concentration range of about 5 ng/mL to about 200 ng/mL, and interleukin 6 (IL-6) in a concentration range of about 5 ng/mL to about 200 ng/mL, wherein said vector is selected from the group consisting of retroviral vectors, adenoviral vectors, and adeno-associated viral vectors, and wherein said stem cell can differentiate into any hematopoietic cell type; and

b) obtaining said modified human pluripotent hematopoietic stem cells.